

Patent claims:

1. A device for treating flat and flexible work pieces (1) with a fluid,
comprising
 - 5 i. at least one protective carrier (5) for holding the work pieces (1),
said protective carrier (5) being adapted to be received, for
treatment, by a tank (3) containing the fluid; and
 - ii. at least one means that permits the fluid to flow into the protective
carrier (5) in such a manner that the work pieces (1) will not
10 substantially deform and/or shift position, after the work pieces (1)
have been received in the protective carrier (5).
2. The device according to claim 1, wherein the fluid is a wet-chemical or
electrochemical processing fluid.
- 15 3. The device according to claim 2, wherein the means for admitting the
processing fluid in the protective carrier (5) comprises at least one aperture
(6) in the protective carrier (5).
- 20 4. The device according to claim 3, wherein the protective carrier (5)
comprises side walls and a bottom wall, the apertures (6) being evenly
spaced apart and distributed over the side and/or bottom walls.
5. The device according to any one of claims 3 and 4, wherein the size of
25 each aperture (6) ranges from 1 to 500 square millimeters.
6. The device according to claim 5, wherein the apertures (6) are provided

with displaceable shutters and/or orifice plates for varying the size thereof.

7. The device according to any one of claims 4 - 6, wherein the apertures (6) are not provided in the border regions of the walls of the protective carrier
5 (5) or wherein they are smaller in diameter in the border regions and/or they are provided in a reduced number in the border regions than in the central regions for the purpose of achieving an electrical shield relative to a counter electrode.
- 10 8. The device according to any one of claims 4 - 7, wherein the bottom wall has at least one drain baffle (27) or at least one drain gate.
9. The device according to any one of claims 2 - 8, wherein at least one means for creating a difference in the levels of the processing fluid inside
15 and outside the protective carrier (5) is provided, so that the processing fluid is allowed to flow into the protective carrier (5).
10. The device according to claim 9, wherein the means for creating the difference in the levels of the processing fluid inside and outside the
20 protective carrier (5) comprises at least one reservoir (7) and at least one delivery system by means of which the processing fluid is circulatable from the reservoir (7) to a tank space located in the tank (3) and outside of the protective carrier (5).
- 25 11. The device according to any one of claims 9 and 10, wherein the means for creating the difference in the levels of the processing fluid inside and outside the protective carrier (5) comprises at least one stationary protective carrier hoist which is associated with the tank (3) and by means of which the protective carrier (5) is conveyable into the tank (3).
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12. The device according to any one of claims 9 and 10, wherein the means for creating the difference in the levels inside and outside the protective

carrier (5) comprises at least one protective carrier hoist which is mounted to a transport carriage for the work pieces (1) and by means of which the protective carrier (5) is conveyable into the tank (3).

- 5 13. The device according to claim 12, wherein the protective carrier (5) is made in at least two parts comprising a bottom baffle and two opposite side baffles which are automatically actuatable and can be opened before the protective carrier (5) is lifted out of the tank (3), the work pieces (1) remaining within the tank (3).
- 10 14. A method of treating flat and flexible work pieces (1) with a fluid in a tank (3) comprising the following method steps:
- i. receiving the work pieces (1) in a protective carrier (5);
 - 15 ii. conveying the protective carrier (5) to the tank (3) or disposing the protective carrier (5) in the tank (3); then
 - iii. filling the protective carrier (5) with the fluid in such a manner that the work pieces (1) will not substantially deform and/or shift position; and next
 - 20 iv. treating the work pieces (1) with the fluid.
- 15 15. The method according to claim 14, wherein the fluid is a wet-chemical or electrochemical processing fluid and is supplied to the protective carrier (5) through at least one aperture (6) therein.
- 25 16. The method according to claim 15, wherein, for filling the protective carrier (5) with the processing fluid, a difference in the levels of the processing fluid is created inside and outside the protective carrier (5), said difference causing the processing fluid to flow into the protective carrier (5).
- 30 17. The method according to claim 16, wherein the difference in the levels of the processing fluid inside and outside the protective carrier (5) is created by conveying the protective carrier (5) to the tank (3) or disposing the

protective carrier (5) in the tank (3) while the processing fluid is supplied to the tank (3).

- 5 18. The method according to claim 16, wherein the difference in the levels of the processing fluid inside and outside the protective carrier (5) is created by conveying the protective carrier (5) into the tank (3) holding the processing fluid.
- 10 19. The method according to any one of claims 17 and 18, wherein the protective carrier (5) is conveyed to the tank (3) using a stationary protective carrier hoist associated with the tank (3).
- 15 20. The method according to any one of claims 17 and 18, wherein the protective carrier (5) is conveyed to the tank (3) using a protective carrier hoist mounted to a transport carriage for the work pieces (1).
- 20 21. The method according to any one of claims 17 - 20, wherein the processing fluid is circulated from a reservoir (7) into a tank space which is located in the tank (3) and outside the protective carrier (5).
- 25 22. The method according to any one of claims 15 - 21, wherein the processing fluid is circulated through the apertures (6) of the protective carrier (5), said protective carrier (5) comprising side walls and a bottom wall and the apertures (6) being evenly spaced apart and distributed over said walls.
- 30 23. The method according to claim 22, wherein the apertures (6) are not provided in the border regions of the side walls of the protective carrier (5) or wherein they are smaller in diameter in the border regions and/or provided in a reduced number in the border regions for the purpose of achieving an electrical shield relative to a counter electrode.

24. The method according to any one of claims 22 and 23, wherein, for filling the protective carrier (5) with fluid, the processing fluid is allowed to flow through the apertures (6) in two side walls of the protective carrier (5) only, said side walls being oriented parallel to the work pieces (1).
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25. The method according to any one of claims 15 - 24, wherein, for filling the protective carrier (5) with fluid, the size of the at least one aperture (6) is adjusted by means of a displaceable shutter and/or a orifice plate according to the mechanical sensitivity of the work pieces (1).
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26. The method according to any one of claims 22 - 25, wherein, for fast draining of the fluid from the protective carrier (5) after treatment, the bottom wall of the protective carrier (5) is provided with at least one drain baffle (27) or at least one drain gate which is opened and through which
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- the processing fluid is allowed to exit.